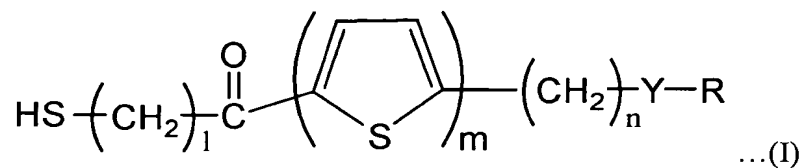


AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listing, of claims in the application:

1. (Original) A conductive compound of formula (I) below:

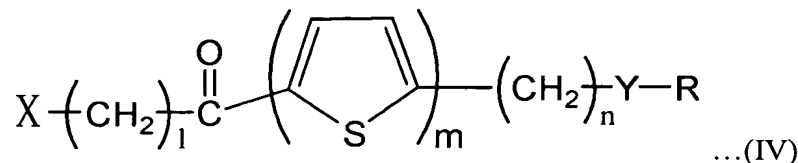


wherein Y is a carbonyl or -NH-; R is one of H, OH, a leaving group, and a probe group; l is an integer from 3 to 6; m is an integer from 1 to 4; and n is an integer from 0 to 3.

2. (Original) The conductive compound of claim 1, wherein the probe group is a nucleic acid or a protein.

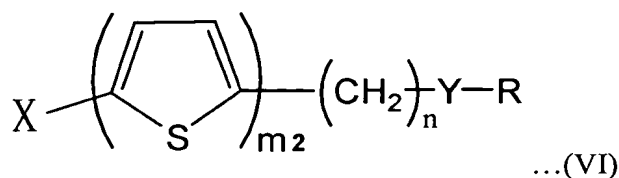
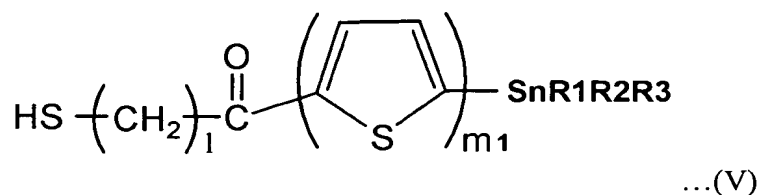
3. (Original) The conductive compound of claim 2, wherein the probe group is selected from the group consisting of a deoxyribonucleic acid (DNA), a ribonucleic acid (RNA), a peptide nucleic acid (PNA), an antibody, an antigen, an enzyme, a cofactor, and a substrate.

4. (Original) A method of synthesizing the conductive compound of said formula (I) of claim 1 by reacting a compound of formula (IV) below with thiourea:



wherein Y is carbonyl or -NH-, R is one of H, OH, a leaving group, and a probe group, X is halogen atom, l is an integer from 3 to 6, m is an integer from 1 to 4, and n is an integer from 0 to 3.

5. (Original) A method of synthesizing the conductive compound of formula (I) of claim 1, comprising reacting a compound of formula (V) below with a compound of formula (VI) below:

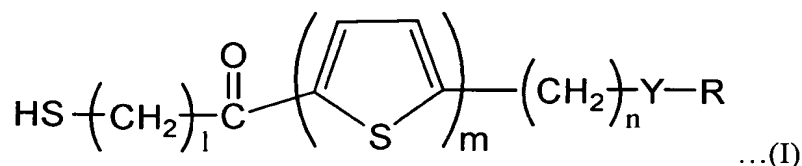


wherein R₁, R₂, and R₃ are independently C₁-C₈ alkyl groups; Y is carbonyl or -NH- group; R is one of H, OH, a leaving group, and a probe group; X is a halogen atom; l is an integer from 3 to 6; m₁ and m₂ are integers from 1 to 4 and 2 ≤ m₁ + m₂ ≤ 4; and n is an integer from 0 to 3.

6. (Original) An electrode coated with the conductive compound of said formula (I) of claim 1, the electrode being made of gold.

7. (Original) A sensor including an electrode coated with the conductive compound of said formula (I) of claim 1, the electrode being made of gold.

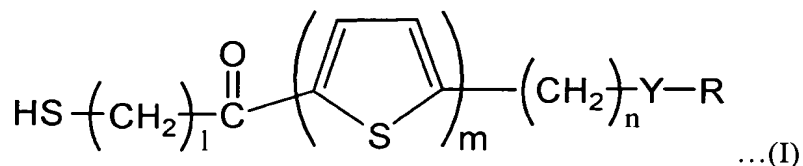
8. (Original) A target molecule detection method comprising:
- (a) immobilizing a compound of formula (I) below on a gold substrate to form a self-assembled monolayer;



wherein Y is a carbonyl or -NH-; R is one of H, OH, a leaving group, and a probe group; I is an integer from 3 to 6; m is an integer from 1 to 4; and n is an integer from 0 to 3;

- (b) reacting a surface of the self-assembled monolayer with probes;
- (c) contacting a target molecule capable of specifically binding to the probes with the probes in the self-assembled monolayer; and
- (d) measuring an electrical signal from the target molecule-probe complex.

9. (Original) A target molecule detection method comprising:
- (a) immobilizing a compound of formula (I) below on a gold substrate to form a self-assembled monolayer;



wherein Y is a carbonyl or -NH-; R is one of H, OH, a leaving group, and a probe group; I is an integer from 3 to 6; m is an integer from 1 to 4; and n is an integer from 0 to 3;

- (b) contacting a target molecule capable of specifically binding to a probe group R in formula (I) with the probes in the self-assembled monolayer; and
- (c) measuring an electrical signal from the target molecule-probe complex.

10. (Currently Amended) The method of claim 8 or 9, wherein the electrical signal is measured from voltage or current variations.

11. (Currently Amended) The method of claim ~~8-9~~ 9, wherein the probes or the probe group is selected from the group consisting of a deoxyribonucleic acid (DNA), a ribonucleic acid (RNA), a peptide nucleic acid (PNA), an antibody, an antigen, an enzyme, a cofactor, and a substrate.

12. (Currently Amended) The method of claim ~~8-9~~ 9, wherein the target molecule is a nucleic acid or a protein.

13. (New) The method of claim 9, wherein the electrical signal is measured from voltage or current variations.

14. (New) The method of claim 9, wherein the probes or the probe group is selected from the group consisting of a deoxyribonucleic acid (DNA), a ribonucleic acid (RNA), a peptide nucleic acid (PNA), an antibody, an antigen, an enzyme, a cofactor, and a substrate.

15. (New) The method of claim 9, wherein the target molecule is a nucleic acid or a protein.